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(71) Applicant
Sabre Safety Limited

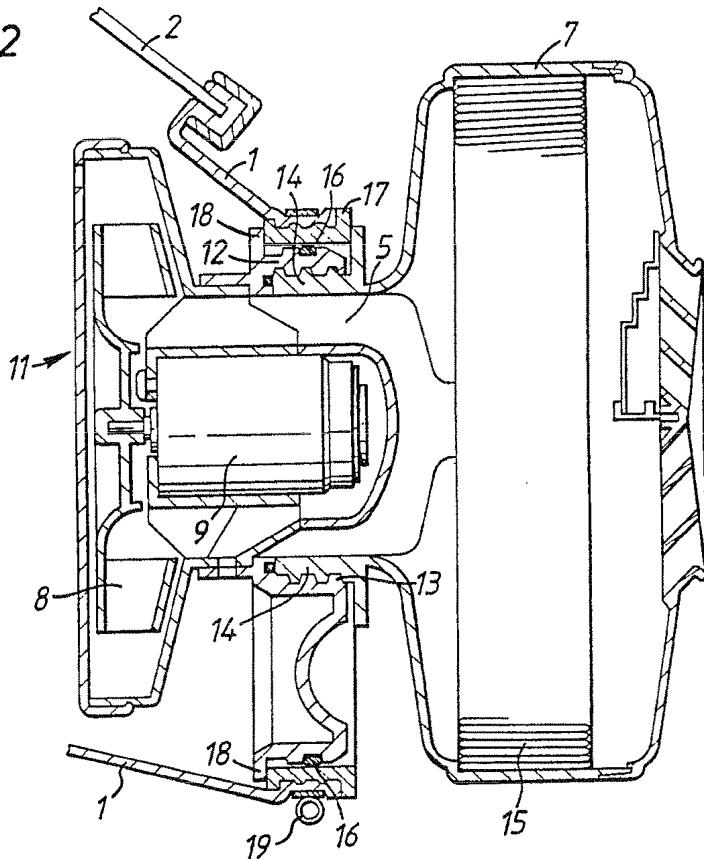
(Incorporated in the United Kingdom)

Ash Road, Aldershot, Hampshire, GU12 4DE,
United Kingdom(72) Inventor
Keith Simpson(74) Agent and/or Address for Service
Hustwitt & Co
St George's House, 44 Hatton Garden, London,
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(54) Positive pressure filter respirators

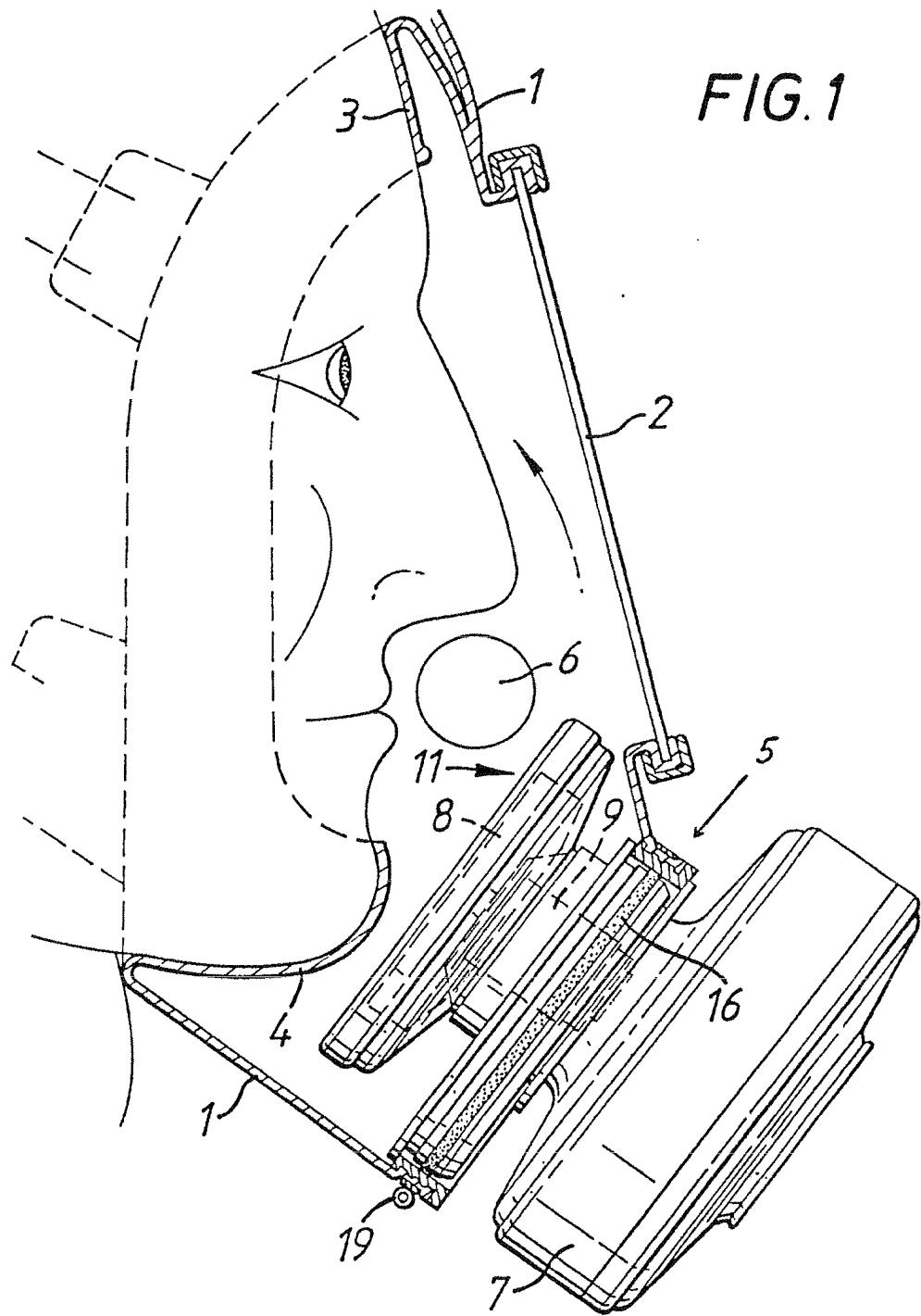
(57) In a positive pressure filter respirator comprising a face mask (1) having an air inlet (5), a filter canister (7) has an externally threaded annular mounting means (14) and an air moving module (11), which includes a fan (8) and a motor (9), has an internally threaded annular mounting means (12). The filter respirator is assembled by positioning the air moving module (11) inside the face mask (1) with its annular mounting means (12) in sealing engagement in the air inlet (5) and then screwing the externally threaded mounting means (14) of the filter canister (7), which is outside the face mask (1), into locking engagement with the mounting means (12) of the air moving module.

FIG. 2



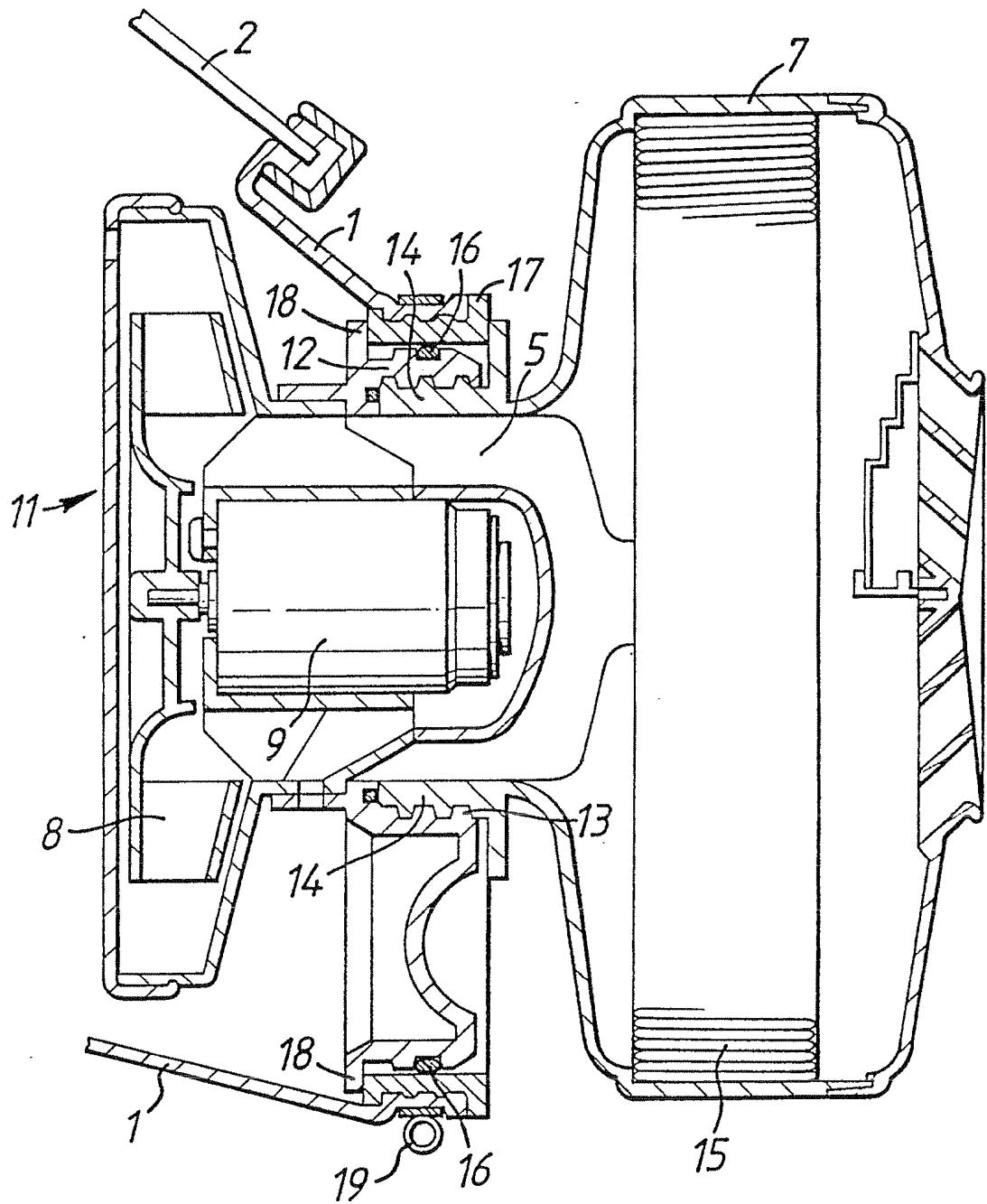
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FIG. 1



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FIG. 2



POSITIVE PRESSURE FILTER RESPIRATORS

This invention relates to positive pressure filter respirators.

In positive pressure filter respirators a positive pressure greater than the ambient pressure is maintained within a face mask surrounding the respiratory passages of a wearer by means of an air mover such as a blower or a fan which delivers air through a filter to the interior of the face mask. The air mover, which may 10 be a battery-driven electrical device, removes from the wearer the need to overcome the resistance of the filter and so reduces the breathing effort required.

The use of positive pressure has the particular advantage that, if there is any leakage, the leakage 15 will all be outward from the protective device thus providing a high degree of protection against the ingress of noxious fumes into the gas which the wearer of the respirator is breathing.

More recently, devices have appeared on the market 20 whereby a fan assembly is interposed between a full face mask and conventional screw-in canister. The advantage of these devices is that there are no cumbersome air hoses attached to the mask. However, they project a long way from the face and therefore can interfere 25 with vision. Additionally they can interfere with the

normal movement of the wearer's head.

According to our Patent Application No. 88.04814 these disadvantages are overcome by incorporating a fan within the normal profile of a standard respiratory mask such that, when a filter is attached, the mask is no bigger than a conventional negative pressure respirator.

According to the present invention there is provided a positive pressure filter respirator comprising a face mask for engaging the head of a wearer, the face mask having an air inlet, a filter mounted to the mask to filter air passing through the air inlet, and air moving means also mounted to the mask for moving air through the filter and the air inlet to establish a pressure 15 above ambient pressure within the mask, both the filter and the air moving means having threaded mounting means, which have corresponding internal and external threads, the filter and the air moving means being assembled to the mask by screwing the threads of the respective 20 mounting means into engagement with the filter positioned outside the mask and the air moving means positioned inside the mask.

The present invention will be further understood from the following detailed description of a preferred 25 embodiment thereof, which is made, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a part cross-sectional side view of a positive pressure filter respirator in accordance with the present invention, and

Figure 2 is an enlarged cross-sectional view showing 5 the manner in which the filter and the air moving means are assembled in the face mask.

Referring to Figure 1 of the drawings there is shown a positive pressure filter respirator which includes a standard full face mask 1, having a visor 2, sealing flaps 3 and 4 engaging the face of a wearer, an air inlet opening generally designated 5 and an exhale valve 6. A filter canister 7 and a radial fan 8 arranged to be driven by a battery-operated motor 9 are mounted to the air inlet 5 so that the air moving means which 10 comprises the fan 8 and the motor 9 is located within the mask 1 and the filter canister 7 is located outside the mask 1. In operation the fan 8 draws air through the filter canister 7 into the interior of the full face mask 1, the filtered air being directed onto the 15 visor 2.

Referring now to Figure 2 of the accompanying drawings, the fan 8 and motor 9 are assembled as a module 11 to which there is secured an internally threaded annular mounting means 12. The internal thread of the 20 mounting means 12 corresponds to the thread of an externally threaded mounting means 14 integrally attached to the filter canister 7 which contains a filter 15.

In assembling the positive pressure filter respirator in accordance with this invention, the air moving means module 11 which comprises the fan 8 and motor 9 is positioned from inside the face mask 1 with 5 its annular mounting means 12 in sealing engagement through an O-ring 16 with a mask seal 17 located in the air inlet 5 in contact with the face mask 1. The external thread of the mounting means 14 on the filter canister 7 is then brought into the air inlet 5 from 10 outside the mask and the module 11 and the filter canister 7 are secured together by screwing the threads on the respective mounting means 12 and 14 into tight engagement. When secured, a flange 18 on the mounting means 12 engages with the mask seal 17.

15 The fan 8 is thus mounted in a position with the fan 8 contained entirely within the face mask 1. In consequence the weight of the fan 8 and motor 9 are carried close to the face and are unlikely to affect the mask seal during rapid head movement. Also, as 20 the air moving means module is within the face mask, the fan 8 and motor 9 will not be subjected to dousing with water during showering of an operator using the filter respirator when his work period is finished.

25 A screw clip 19 engaging the outer surface of the face mask 1 around the air inlet 5 helps to maintain the seal at the air inlet 5.

The construction of positive pressure filter respirator herein described has the fan and motor module 11 retained within the mask by the simple action of screwing the filter into the module 11. In consequence no special tools are required for assembling or disassembling the respirator which is easily taken apart for cleaning purposes. The fan and motor module is readily removable from the mask when the inside of the mask 1 is to be cleaned.

CLAIMS:

1. A positive pressure filter respirator comprising a face mask for engaging the head of a wearer, the face mask having an air inlet, a filter mounted to the mask 5 to filter air passing through the air inlet, and air moving means also mounted to the mask for moving air through the filter and the air inlet to establish a pressure above ambient pressure within the mask, both the filter and the air moving means having threaded 10 mounting means, which have corresponding internal and external threads, the filter and the air moving means being assembled to the mask by screwing the threads of the respective mounting means into engagement with the filter positioned outside the mask and the air moving 15 means positioned inside the mask.
2. A positive pressure filter respirator substantially as hereinbefore described with reference to the accompanying drawings.